Snowshoe hares occupy a small niche in Tahoe mountains, *page 19*

Winter 2013-14

TAHOE IN DEPTH

Protecting, Enjoying & Exploring the Lake Tahoe Basin

TAHOE'S SUGAR PINES

The great tree with the enormous cones facing deadly threat

By Bill Romanelli
Special to Tahoe In Depth

Pinus lambertiana is the unrecognizable name for the tree that grows what is perhaps the world's most recognizable and collected pinecone. It's commonly known as the sugar pine, a name it earned for its sweet-tasting sap, which, according to legend, John Muir preferred to maple syrup.

They are the largest of the pine species, easily identified by their enormous pinecones, which grow from 14 to 20 inches long. At this time of the year, you can hardly walk a block without seeing one as part of a holiday decoration; in addition, websites are devoted to buying and selling their pinecones around the world.

There's just one problem: The sugar pine population is dying.

A sugar pine rises up along the shoreline of Lake Tahoe.

The villain in this story is a pathogenic fungus known as blister rust, which found its way to North America in the early 1900s. Ironically, it was brought here by Canadian foresters trying to restore clear cut areas with white pine seedlings grown in Europe. Little did they know they were unleashing a scourge that would put the health of entire forests at risk.

Today, there's little chance of stopping the fungus, which attacks all species of white pine, of which sugar pine, western white pine, and whitebark pine grow in Tahoe. Fortunately, researchers have discovered that roughly 5 percent of sugar pines and

Continued on page 4

Bear conflicts prompt new container rules

By Jim Sloan
Tahoe In Depth

Encounters between humans and bears have been increasing at Lake Tahoe in recent months and Incline Village officials are poised to require residents there to start using bear-proof garbage containers.

In the fall, black bears in the Tahoe region dramatically increase their caloric intake from 3,000 calories a day to 25,000 calories as they store energy for their winter hibernation. When the backcountry doesn't provide enough food for

Continued on page 6

A bear hunts for salmon in Taylor Creek.

INSIDE THIS ISSUE:

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TAHOE IN DEPTH
Protecting, Enjoying & Exploring the Lake Tahoe Basin

Our Lake is on world stage

Tahoe inspires protections for other spectacular locations

There's nowhere better than Lake Tahoe to get into the holiday spirit. Sturdy green conifers are dolloped with snow like vanilla icing on gingerbread. The Lake mirrors the bright blue sky and the crisp, clean air signals the beginning of winter. From all of us at Tahoe In Depth, we hope you enjoy this magical season.

We are delighted to bring you the third issue of our environmental newspaper. Your generous support has made the continuation of the publication possible and we are grateful. We have subscribers now from coast to coast. Just as Highway 50 stretches from California to Maryland, linking east and west, so does the reach of Tahoe's influence.

Our spectacular Lake is clearly on the national and world stage. This fall, I was invited to speak at a conference in the beautiful Adirondacks in upstate New York. They were interested in learning more about Tahoe's well-respected water quality policies and environmental restoration initiatives. Tahoe continues to inspire other spectacular places both domestic and abroad (see story about our partnership with Lake Baikal on page 7). Even Former Vice President Al Gore made mention of our global reach in a recent visit, as you can read about on page 17.

Thanks again for taking the time to read Tahoe In Depth and supporting our mission to educate locals and visitors about the extraordinary work underway to protect and restore Lake Tahoe.

– **Julie Regan**, *executive editor*

Tahoe In Depth

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IN THIS ISSUE

Kings Beach renovation under way

An artist's rendering of Highway 28 through Kings Beach shows how the project will foster walking and cycling, and make it easier for visitors to linger and enjoy the shops and restaurants.

Contract awarded for $21.4 million facelift, erosion-control effort

By Jim Sloan
Tahoe In Depth

Work crews install a speed cushion on Bear Street in Kings Beach.

A $48 million revitalization of Kings Beach — in development for nearly 15 years — reached a major milestone in November when Placer County Supervisors awarded a $21.4 million construction contract for the project.

The Kings Beach Commercial Core Improvement Project will not only provide a facelift for the commercial area — making it a more inviting place for visitors to walk around and visit the local shops and restaurants — but will also overhaul the area's stormwater drainage system and dramatically cut down on the volume of pollution reaching Lake Tahoe. Currently, sheets of runoff flow off the highway, parking lots, and neighborhoods of Kings Beach directly into the Lake, but the new stormwater collection system will capture that runoff, route it through sediment-removing treatment facilities, and eliminate an estimated 45,000 pounds of sediment per year that now enter the Lake.

"Everyone, from the local level to the federal level, realizes that we need to do all we can to stop the loss of clarity that Lake Tahoe has suffered since the 1950s," said Placer County Supervisor Jennifer Montgomery, whose fifth district includes Lake Tahoe, in a statement. "The project hits the sweet spot of the triple bottom line. It will not only help economically revitalize the Kings Beach commercial core, and will create a cohesive, walkable community, but will serve as a model on how to improve the health of Lake Tahoe."

In addition to the vast environmental improvements, the project is expected to be an economic boon for the 100 businesses that currently line the highway through Kings Beach. The existing alignment of the highway makes it difficult for people to walk around or ride their bikes, but the reconstructed boulevard is expected to lure shoppers, diners, visitors, and local residents to the lakefront and downtown area, sparking additional investments in the privately owned commercial structures.

Work has already started on some aspects of the project. Utilities have been moved in preparation for the major reconstruction of the highway, and some of the traffic-calming devices and raised crosswalks have been added in the surrounding neighborhoods. The major aspects of the work will begin in spring 2014 and could take up to three construction seasons. An additional $10 million is needed to complete the project.

Placer County's Department of Public Works Tahoe office will manage the project and plan to regularly notify residents and businesses of construction scheduling and other related events. For more information on the Kings Beach Commercial Core Improvement Project, visit kingsbeachcore.info.

As part of the project, Placer County has set up a Benefit Assessment District designed to maintain the infrastructure being developed as part of the Kings Beach project.

The district will provide sidewalk and parking lot snow management, landscape maintenance, irrigation water, sidewalk cleanings and weekly trash receptacle collection from the 15 installed trash receptacles throughout the area.

Project will bring a dramatic transformation

After the Kings Beach project is completed, what most visitors will notice is the transformation of a 1.1-mile stretch of State Route 28, which cuts through the Kings Beach commercial core.

The state highway will be reduced from a four-lane highway located in places just a few feet from business entrances to a three-lane road with roundabouts, bike lanes, sidewalks and public bus shelters.

The side streets that intersect State Route 28 will also be improved with stormwater infrastructure, sidewalks, formalized parking areas, and traffic-calming devices. The improvements will make the streets safer for pedestrians, and the debris and pollution currently washing off of them will be captured and filtered.

The new look for Kings Beach will transform the existing State Route 28 (above) into a more pedestrian friendly thoroughfare with bike lanes and parking, as depicted in an artist's rendering (below).

Sugar pines facing threat from deadly fungus

Continued from page 1

western white pines have a natural genetic resistance to blister rust. Therein lies the salvation of their populations, and the mission of the Sugar Pine Foundation.

"We've planted nearly 70,000 resistant trees around the Lake Tahoe Basin since 2008," Foundation Executive Director Maria Mircheva says. "We have planting events every spring and fall, planting seedlings grown in the Cal Forest Nursery in Etna from seed we collected from proven resistant seed trees."

When the group isn't planting sugar pines, it's collaborating with members of the South and North Tahoe environmental education coalitions to educate the public through school field trips, presentations, and guided hikes.

Ultimately, it's not solely about the trees themselves, but about the vital role biodiversity plays in keeping forests healthy. Healthy forests in turn keep human beings alive. It's widely known how important forests are for absorbing carbon dioxide and producing oxygen, but they're also a vital link to our water supply. They help regulate snowmelt and runoff, and provide filtration critical to the health of the watershed.

"We like to say one of the best ways to keep Tahoe blue is to keep the forests green. We are really talking about the very air we breathe and the water we drink," Mircheva says. "Nothing can be more important than that."

As a nonprofit with an annual budget of about $60,000, the Foundation, like the pines themselves, has plenty of growth potential. To find out ways to help, visit their website, www.sugarpinefoundation.org. You can also buy sugar pine seedlings to plant in your yard. Beyond financial support, volunteers are always in demand when planting season comes around.

"We need help planting seedlings every spring and fall," Mircheva says. "We're so thankful for all our volunteers — together we can ensure there's a healthy forest for the future."

A motorboat and waterskier enjoy a calm day on the Lake. An estimated 3,000 watercraft arrived at inspection stations "cleaned, drained and dry" and were able to get on the water faster as a result.

Inspection program has banner year

More than 4,000 watercraft decontaminated at inspection stations in 2013

By Patrick Stone
Tahoe Regional Planning Agency

More than 14,000 motorized boats were used on Tahoe waters in 2013. Approximately 7,500 of these were "Tahoe Only" boats that pose less threat of introducing invasive species to Tahoe than boats that travel between waterbodies.

Over 7,000 inspections were conducted by the Tahoe watercraft inspection program and the Tahoe Resource Conservation District. As a result of these inspections, 4,221 watercraft were decontaminated with hot water to prevent invasive species, excessive oils, or other contaminants from entering Tahoe's pristine waters.

Twenty boats that were inspected in Tahoe were found to be transporting invasive aquatic animals, including quagga mussels and New Zealand mudsnails. Another 16 watercraft were found carrying aquatic vegetation.

About 3,000 boaters arrived at Tahoe inspection stations with their watercraft clean, drained, and dry; these boaters helped protect Tahoe waters and got on the water faster. Visit TahoeBoatInspections.com to learn how you can get on the water faster, too.

Nearly 200 boaters were asked to take a quick survey about their experience at the Tahoe watercraft inspection stations; 75 percent said they were very satisfied with their experience and no one said they were dissatisfied or unhappy with their experience.

Tahoe Keeper watercraft inspectors gave free inspections to 864 non-motorized boaters (mostly using kayaks or standup paddleboards), and some 845 paddlers joined the Tahoe Keepers stewardship community. The total number of Tahoe Keepers is now over 1,500. You can join the community at TahoeKeepers.org.

Twenty local community festivals and events supported a Tahoe Keepers information booth, where visitors could learn about the invasive species threatening Lake Tahoe and sign up to be a Tahoe Keeper.

Seventy-five members of the public attended the 2013 Tahoe Region Aquatic Invasive Species Public Forum in May 2013 to learn, ask questions, and provide feedback on a diverse set of topics including aquatic weeds, bullfrogs, warm water fish like largemouth bass or bluegill, and future volunteer opportunities. More information will be available this winter on how to participate in future forums.

More than 8,200 gallons of aquatic weeds (about 250 trash cans) were removed from approximately 10.5 acres of Lake Tahoe's nearshore environment.

Thirty "Eyes on the Lake" volunteers participated in aquatic plant identification training hosted by the League to Save Lake Tahoe and are now keeping an eye out for aquatic invasive plants throughout the region while they enjoy their waters. Find out more at: keeptahoeblue.org/our-work/eyes/

No aquatic weeds were found in Emerald Bay during post-project monitoring surveys in fall 2013.

This year, program managers from the Lake Tahoe Aquatic Invasive Species Program coordinated with 16 western states and regional managers to share resources, provide consistency between licensing and inspection programs, and to ultimately improve invasive species prevention efforts in the western United States.

Bijou project to filter watershed

$11 million investment will greatly reduce sediment reaching Lake

By Tracy Franklin
City of South Lake Tahoe

The amount of sediment churning into Lake Tahoe will decrease dramatically next year when crews complete work on the $11 million Bijou Area Erosion Control Project.

The project, one of the first of its kind in the Tahoe Basin, involves removing the existing Bijou Creek storm drain system that funnels runoff from the 1,300-acre Bijou watershed directly into Lake Tahoe.

The new engineered system is a comprehensive regional treatment approach in which the runoff will be collected and pretreated in underground storage vaults and then pumped uphill in the watershed for infiltration in basins. Infiltration is one of the only known mechanisms for effective removal of fine sediment, but the developed Bijou area did not offer a good location for a detention basin.

Prior to the urbanization of the South Shore decades ago, Bijou Creek flowed through its meadow and into a barrier beach and marsh system before it reached Lake Tahoe. That process naturally filtered out much of the sediment from the stream. When the area was extensively modified, Bijou Creek was relegated to a pipe running under U.S. Highway 50 and the Bijou Center with little filtration.

Under the new system, high-pollutant stormwater from city streets, Highway 50, and private property in the Bijou commercial core will be collected in the separate drainage system and sent through the underground vaults before being pumped through an underground stormwater "force main pipe" to water-quality treatment basins upstream in the meadow off Glenwood Way.

When the project is completed, water entering the Lake will be vastly cleaner than the runoff that has been flowing through the existing, 50-year-old drainage system.

The project also includes a series of grassy swales that will serve as emergency overflow from the treatment basins. Grass sod from the meadow is being salvaged and restored following the excavation of the shallow depressions. The installation of the swales is for emergency purposes only and will not affect recreation in the meadow.

Crews install some of the massive underground storage vaults that are part of the innovative stormwater filtration system.

A series of grassy swales will serve as an emergency overflow from the filtration basins. Grass sod was salvaged and restored for the shallow depressions.

Trevor Coolidge, the project manager for the City of South Lake Tahoe, said he's glad to see the project under way.

"Both the City and agencies from around the Tahoe Basin are excited to finally see the project improvements taking shape," he said. "It's an innovative design and a regional model for treating stormwater."

The project will benefit Lake clarity by treating stormwater at one of the highest priority outfalls to Lake Tahoe while improving drainage conditions in the commercial core by updating infrastructure.

The Bijou Erosion Control Project, when completed, will provide a third of the city's state-mandated requirement for reducing fine sediment from entering Lake Tahoe.

TRPA approves city's Tourist Core Area Plan

The TRPA Governing Board recently unanimously approved the City of South Lake Tahoe's Tourist Core Area Plan, which will guide land use, transportation, infrastructure, community design, environmental, and other decisions within the boundaries of the former Stateline/Ski Run community plan.

Additional improvement projects that will enhance South Lake Tahoe's community, economy and environment include the Harrison Avenue Streetscape Project, which has a proposed ground-breaking of May 2014.

This project is a public-private partnership to create a distinct commercial district in the Harrison Avenue area. The project includes stormwater treatment and the redesign of Harrison Avenue, Riverside Avenue, and the side streets to include sidewalks, landscaping, lighting, additional parking, and gateway signage. Harrison, Riverside, San Jose, Alameda, and San Francisco are proposed to be one-way streets to make space for diagonal parking and a Class I bike trail on Riverside.

Harrison Avenue (top photo) would be transformed (bottom) by the Harrison Avenue Streetscape Project.

Bears and humans share habitat

Residents learn to cope with bears during animals' fall search for food

Continued from page 1

them to eat, – usually in the form of berries and nuts – they will be attracted to residential or commercial areas by the smell of garbage or stored food.

Nevada Department of Wildlife officials say most human-bear conflicts can be avoided if garbage is handled more safely and in a way that doesn't attract hungry bears. When bears become accustomed to human environments or are particularly aggressive about breaking into homes or places where they can find food and edible garbage, they often have to be killed; scaring them off and transporting them back to the wilderness is proving to be ineffective. These bears then become a genuine threat to public safety.

A bear strolls around Thunderbird Lodge on the East Shore south of Incline Village.

As a result, officials have been working to convince Tahoe Basin residents to handle their garbage in a way that doesn't attract bears by using special bear-proof containers.

The Incline Village General Improvement District Board of Trustees is considering new rules that would require residents to use wildlife-resistant locking waste containers for their food-tainted waste. Customers would be able to opt out of using the locked containers only if they have a site-mounted, approved, metal bear box.

For commercial customers, all of the more than 300 dumpsters used within Incline Village and Crystal Bay would have to be upgraded to parks-style, wildlife-resistant dumpsters, which resemble the models used in national parks, U.S. Forest Service, and Bureau of Land Management visitor centers and campgrounds. These new, enhanced dumpsters do not require the unlatching and relatching of a manual lock.

Bear populations in California and Nevada are thriving. The population of 30,000 bears in California is two to three times what it was 30 years ago.

This fall was a particularly busy time for wildlife officials before the bears slowly pulled back and went into hibernation, which they typically do between Thanksgiving and Christmas each year. With the availability of nuts and berries in the mountains at a minimum this year, bears moved down as low as Reno to find garbage and fruit off backyard fruit trees. Two female bears caught in west Reno were relocated to the mountains, where they were released to the sting of rubber buckshot and chased by Karelian bear dogs as part of an "aversion conditioning" exercise designed to teach the bears to avoid humans.

Wildlife officials take special precautions to make sure bears don't become comfortable around humans. For example, an orphaned bear cub was recently captured in Verdi after its mother was accidently killed by an automobile.

That 30-pound male bear, which would not have survived the winter alone, will be held in an isolated area of the Animal Ark Wildlife Sanctuary north of Reno until it can be placed in an artificial den in the Sierra Nevada in late winter or early spring.

"We have successfully done this with orphaned cubs a number of times in the past," Nevada Department of Wildlife black bear biologist Carl Lackey said.

Tips for bear-proofing your home

- Make birdfeeders inaccessible to bears.
- Do not leave doors or windows open.
- Doors should be solid wood or metal and have heavy deadbolts.
- Remove all food from vacation or part-time homes.
- Block access to under-house crawl space.
- Don't leave garbage near the house.
- Don't leave pet food outside or feed pets outside.

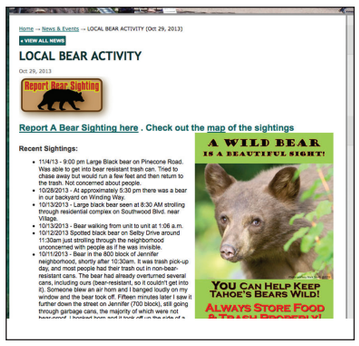
These and more tips available at Bear League website savebears.org

What to do if you encounter a bear:

Bears may moan, woof, stomp the ground, or make false charges at you when you encounter them. These are not necessarily signs of an aggressive bear but could be the bear's way of telling you that you are too close. Black bears rarely attack people, but attacks have increased the last 30 years. Here's how to act when in the presence of a bear:

- Keep your distance. Never approach or feed a bear.
- Give it plenty of room to pass by and it usually will.
- Keep a close watch on children while they are outdoors. Teach them to stay together, back away from the bear and find an adult when they see a bear.
- If a bear approaches you, speak in a loud, firm voice "get away bear!" Raise your arms to make yourself appear bigger and back away to a safe area. You cannot outrun a black bear.
- If attacked, people have succeeded in driving away the bear by hitting it with stout sticks or rocks and punching it in the nose.
- Carry bear spray.
- When camping, keep your site clean and never store food in your tent. Do not cook in the same clothes you sleep in and always cook away from your sleeping area.

Source: Nevada Department of Wildlife



Keeping track

The Incline Village General Improvement District maintains a web page (ivgid.org/news_events/view/local_bear_activity) where residents can enter bear sightings and include details about the time, location, and the type of bear activity. The web page gets a lot of use in the fall when bears are ingesting extra calories in preparation for winter hibernation.

Connecting across 10,000 miles

Tahoe-Baikal Institute helping protect two special lakes

By Jeff Cowen
Tahoe Regional Planning Agency

This summer, the Lake Tahoe Summit was crowded with political dignitaries with a common goal: preserve and protect Lake Tahoe. Former Vice President Al Gore, Sens. Dianne Feinstein and Harry Reid, and the governors of California and Nevada were all in attendance. The summit also played host to an unexpected guest: the Russian Ambassador to the United States, Sergey Kislyak.

At a time when Russian-American relations can be characterized as "challenged" at best, Reid took a moment to highlight a remarkable and little-known non-governmental organization operating between the two countries. "We have now the Tahoe-Baikal Institute," Reid said, "a program of cultural and environmental exchanges between students and academics. It's a wonderful organization."

The Tahoe-Baikal Institute (TBI) unites young leaders from across the globe at Lake Tahoe and Lake Baikal in southern Siberia. Participants live and travel together in the U.S., Russia, and Mongolia, learning from policy makers, regulatory agencies, and each other.

In recent years the institute, like many nonprofits, has seen a significant drop in funding, which largely comes from private donors. Now it is looking to strengthen itself by partnering with other organizations, TBI Programs Director Matt Robertson said.

"It may be time to reinvent ourselves, but I am confident we are here to stay," Robertson said. "We have pioneered a globalized, holistic approach to environmental education and cultural exchange. Our program works. We just need to adjust."

TBI's Summer Environmental Exchange (SEE) Program is a nine-week watershed education and leadership development program hosted at Lake Tahoe, Lake Baikal, and the Selenga River in Mongolia, the upper watershed of Lake Baikal. Participants learn about watershed protection, sustainable development, environmental science, policy, and management.

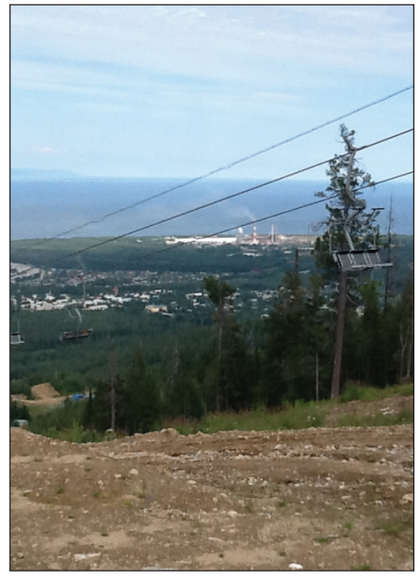
Russian Ambassador to the United States Sergey Kislyak met with Russian students at Lake Tahoe this summer during the Lake Tahoe Summit. The students study Tahoe and Lake Baikal in Russia (below) to learn about watershed protection and environmental practices.

Participants learn about current environmental initiatives, as well as the natural and cultural history of the Tahoe and Baikal watersheds. They spend four weeks at Lake Tahoe, 10 days in Mongolia, and four weeks at Lake Baikal. Through small-group investigative projects, ecological restoration work, meetings with experts, and interactive workshops that simulate environmental problem-solving scenarios, participants apply their diverse skills and observe how political, legal, and administrative bodies work together with researchers, academic organizations, nonprofits, businesses, and residents to promote stewardship and environmental protection.

Former TBI participants can be found at the Tahoe Regional Planning Agency, the California Tahoe Conservancy, Environmental Incentives, and the League to Save Lake Tahoe.

Their experiences have also led to other international outreach efforts. Recently, University of Nevada, Reno's Dr. Sudeep Chandra, a top expert in Lake Tahoe's Aquatic Invasive Species Program, launched a program to educate Guatemalans on strategies to protect Lake Atitlan—one of that nation's most treasured natural resources. Chandra has been working on eutrophication — the process of lake decay and algal growth — and other issues at Atitlan. Chandra also

Continued on page 8



A ski lift rises up from the shoreline of Lake Baikal in Russia, a scene reminiscent of Lake Tahoe. Both lakes enjoy legendary clarity but also face environmental problems.

Summer Environmental Exchange participant Kieran Ficken discovers that a recently installed bridge over the Vydrina River in Baikalsky National Park in Russia survived the flood season.

Baikal Institute works for lakes around the world

The Tahoe Baikal Institute was established in 1990 to help preserve Lake Tahoe in California and Lake Baikal in Siberia, as well as other significant and threatened lake ecosystems around the world. This preservation is realized through environmental education programs, research, and international exchanges of students, scholars, and practitioners in science, policy, economics, and other related disciplines.

According to the United Nations Educational, Scientific and Cultural Organization, Lake Baikal contains 20 percent of the world's unfrozen freshwater reserve. It's known as the Galapagos of Russia due to its age, isolation and rich and unusual freshwater fauna, which includes a species of freshwater seals. UNESCO's Committee on World Heritage deemed it "the most outstanding example of a freshwater ecosystem" and declared that it has "exceptional value to evolutionary science."

Baikal by the numbers

- **Water clarity:** 130 feet
- **Water:** 50 to 54 degrees F in August
- **Supports** 1,340 animal species (745 endemic) and 570 plant species (150 endemic)
- **Maximum depth:** 5,387 feet
- **Width**: 49 miles
- **Length:** 395 miles

Grants to help Tahoe become more walkable, bikeable

On Our Way Program to support neighborhood, transportation improvements

By Jeff Cowen
Tahoe Regional Planning Agency

On Our Way is a new Lake Tahoe community grant program that will help citizens and local governments design and evaluate transportation and neighborhood improvements to achieve regional goals of creating more attractive, walkable, mixed-use centers and encouraging more biking and transit use. The program will be funded with planning funds available through the Tahoe Metropolitan Planning Organization (TMPO).

In December 2012, the region approved Mobility 2035, Lake Tahoe's Regional Transportation Plan. Major goals of the plan include revitalizing communities and reducing environmental impacts by improving transportation options.

"Mobility 2035 includes transportation projects that will provide safer, more efficient travel by all modes, particularly by bicycle, transit, walking, and waterborne ferry," said Karen Fink, senior transportation planner at the Tahoe Regional Planning Agency. "Now we're ready to further encourage economic vitality and provide more transportation options."

Community members can use the grant program to develop project plans that directly inform the next Regional Transportation Plan update, Fink said, including things like streetscape improvements, pedestrian promenades, or safety upgrades for pedestrians and bicyclists.

Did you know?

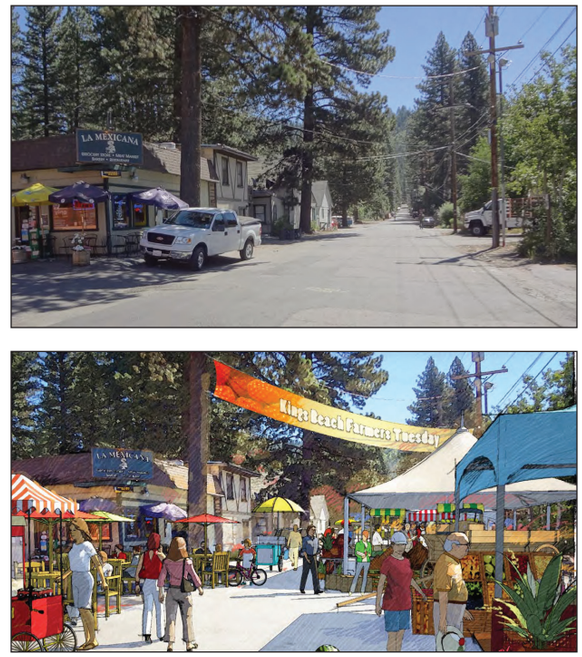
More than a decade ago, the U.S. Congress granted the Tahoe Regional Planning Agency the designation of the Tahoe Metropolitan Planning Organization, improving regional transportation planning and funding opportunities.

Funding may also be used to develop new policies or programs that help meet mobility and sustainability goals. This could include studies that examine barriers to redevelopment, or ways to generate more funding for local transportation projects.

TMPO will begin accepting applications in 2014 for the On Our Way Community Grant Program. Successful applicants will receive funding to create implementable plans that will improve mobility, economic success, environmental quality, and quality of life. The grant is designed to fund both small and large project planning.

Fink said an example might be a parent-teacher association that wants to evaluate options to increase pedestrian safety and traffic flow around a school, or a business group that wants to compare how streetscape improvements, parking alignments, or art installations might increase the economic vitality of an area.

"There is a need in individual communities around Lake Tahoe to identify barriers to reinvestment, revitalization, and improved transportation," City of South Lake Tahoe Manager Nancy Kerry said. "A big boost can come from collaborating on ideas and developing performance measures to evaluate the outcomes."



The top photo shows Brook Avenue, a street that parallels State Route 28 in Kings Beach, as it is today, and the bottom photo is an Illustration of closing Brook Avenue for street festivals and open air markets like a farmers market.

On Our Way grants must propose tangible solutions and quantify the benefits of a project or plan to local communities. They will ideally lead to capital improvements or new policies. TMPO will offer resources such as webinars to help bring ideas and information about the types of projects and plans that can drive mobility and quality-of-life goals in a community.

Applicants for On Our Way grants may be Business Improvement Districts, nonprofits, local jurisdictions, agencies, or other formalized community groups. More information is available at tahoempo.org or by contacting Fink at 775-589-5204 or by email at kfink@trpa.org.

Institute works on projects that benefit both Tahoe and Russian lake

Continued from page 7

worked with the U.S. State Department to bring a delegation to Lake Tahoe to learn from the people and organizations that have been combatting similar sedimentation and algae growth here.

Although Tahoe is dwarfed by the 400-mile-long Lake Baikal — the oldest, deepest and largest lake by volume in the world — the two lakes have a great deal in common. Both are divided by a multitude of political jurisdictions, and both have something of a turbulent environmental past. Tahoe's purity was threatened by overdevelopment, while Baikal's was threatened by industrial pollution from a pulp and paper mill.

Baikal's surface is more than 12,000 square miles and its depth surpasses 5,000 feet (Tahoe is 1,600 feet), so close to the earth's mantle that volcanic vents appear. Home to the world's only fresh water seal, the Baikal Nerpa, Lake Baikal is a UNESCO World Nature Heritage site, and remains remarkably well preserved and protected—for now. Lately a large part of the work carried out by Tahoe-Baikal Institute alumni and staff is promoting sustainable tourism and development in a culture in which "leave-no-trace" camping is a decidedly foreign concept. The institute works not just for Tahoe's behalf, but Lake Baikal's as well.

Most of the water that enters Baikal comes from Mongolia, meaning that the current Mongolia mining boom has direct consequences for Lake Baikal. Tahoe's innovative bi-state cooperation serves as inspiration and a potential template for Baikal's future management.

"When enjoying the wonders of Tahoe, think of the parallels 10,000 miles away," Tahoe-Baikal Programs Director Matt Robertson said, referring to the impossibly similar qualities — incredibly blue lakes ringed by snow-capped mountains with shallow coves, crystalline waters, and soft sand. "The Tahoe-Baikal Institute is working to ensure that future generations can enjoy these dual wonders of the natural world."

To learn more about Tahoe-Baikal Institute, visit tahoebaikal.org, or contact Programs Director Matt Robertson at mrobertson@tahoebaikal.org, or call 530-542-5599.

Conservancy program gives to the community

Firewood program helps residents while thinning overgrown forests

By Victoria Ortiz
California Tahoe Conservancy

There's nothing like cozying up to a crackling fire during a howling snowstorm, and thanks to a 10-year-old program by the California Tahoe Conservancy, more Lake Tahoe residents are able to experience that joy for free.

The Community Firewood Program is an offshoot of the Conservancy's efforts to manage the health and fuel load of the forest lands it owns.

The Conservancy is a major landowner in the Tahoe Basin, and as such it has a responsibility to remove hazardous trees and thin overgrown forests that could provide fuel for a catastrophic wildfire.

The trees harvested on Conservancy properties each year are cut into firewood rounds for public collection by people who stop by the Conservancy office and pick up a permit. The free 90-day permits are good for up to two cords of wood for residential use. The program starts in early spring, depending on the weather, and the Conservancy typically distributes about 400 permits a year.

"We're happy to provide the Community Firewood Program as a tangible benefit to our community, in addition to the intrinsic benefits of removing hazard trees and thinning overgrown forests," Conservancy Executive Director Patrick Wright said.

Hand crews treat most Conservancy urban lots and environmentally sensitive areas, while other contractors treat large upland areas with low ground pressure machinery. The machinery allows the Conservancy and other land management agencies to create a healthier forest faster and more cost effectively.

The Conservancy treats about 100 acres by hand crews per year. For more than 20 years, the Conservancy has contracted through the Tahoe Resource Conservation District to hire one or more hand crews. The agency also works with the California Conservation Corps, fire protection districts, and contractors.

A crew member prepares to remove a tree on Conservancy property. For more information on the Community Firewood Program: tahoe.ca.gov or 530-542-5580.

Numerous groups and agencies work together to manage fuel loads and forest health in the Tahoe Basin. "The forest is a fundamental component of water quality and ecosystem health," Conservancy Forester Brian Hirt said. "If we don't keep our forests healthy, then we will see negative effects seep into the environment."

This year, the Conservancy also teamed up with California Conservation Corps and the Kiwanis Club of Tahoe Sierra to provide wood to locals who are elderly or disabled so they, too, can sit by a toasty fire.

Ski free when you purchase a Lake Tahoe license plate

Tahoe Fund's "Plates for Powder" program is back and offering two free lift tickets when you purchase a new California or Nevada Tahoe license plate.

"Thanks to our partnership with local ski resorts, when you buy a Tahoe plate, you can enjoy Tahoe while helping to improve it," said Tahoe Fund CEO Amy Berry.

Skier Julia Mancuso helps promote 'Plates for Powder.'

The funds raised through the sale of Tahoe license plates from now until April 1 go directly to the California Tahoe Conservancy and Nevada Division of State Lands to support hiking and biking trails and watershed restoration projects. The Tahoe Fund, a nonprofit dedicated to raising money and support for environmental improvement projects that will improve Lake clarity, recreation, and stewardship, is organizing the program.

The 11 participating resorts include: Alpine Meadows, Diamond Peak, Heavenly, Homewood, Kirkwood, Northstar California, Royal Gorge Cross Country, Sierra-at-Tahoe, Squaw Valley, Sugar Bowl, and Tahoe Cross Country.

Current Tahoe license plate holders are also eligible for free tickets through the "Plate Spotter" program. They can post a photo of their Tahoe plate to the Tahoe Fund Facebook page, and a winning photo is chosen bi-weekly to receive two free lift tickets.

Information on how to purchase a plate and redeem free tickets is available at tahoeplates.com. Some restrictions apply; visit the website for more details.

Green Bucks allows businesses, visitors to contribute to conservation

Businesses around the region are seizing a new opportunity to make a difference for the environment through Green Bucks, a program launched by the Tahoe Fund and the Truckee River Watershed Council.

With Green Bucks, visitors can voluntarily contribute to ongoing efforts to improve hiking and biking trails, fund watershed restoration projects, protect wildlife, and support environmental stewardship education programs.

Green Bucks is based on popular dollar donation programs across the country. The idea is simple: businesses add a dollar donation onto major items like hotel rooms, ski tickets, golf rounds, or meals. These dollars add up to support hiking and biking trails, watershed restoration projects, wildlife protection, and environmental stewardship programs.

"The Green Bucks program is a way for visitors who understand the fragile nature of the Lake to lend their support to keep the Lake clear for our kids, grandkids, and future generations," said Carol Chaplin, executive director of the Lake Tahoe Visitors Authority. "The environmental health of the Lake wins with every donation and visitors have a direct stake in our efforts to improve recreation access and protect and preserve our national treasure."

Leading travel website company TripAdvisor is lending support as well. Businesses that sign up for Green Bucks will earn points toward TripAdvisor's GreenLeader program, which helps travelers plan greener trips.

The following businesses are already lending their support to the program:

Alpine Meadows, Squaw Valley, Homewood Mountain Resort, Lake Tahoe Visitors Authority, MontBleu Resort & Casino, Mourelatos Lakeshore Resort, PlumpJack Squaw Valley Inn, Resort at Squaw Creek, River Ranch Lodge & Restaurant, Squaw Valley Lodge, Tahoe Mountain Properties, Tahoe Mountain Resorts Lodging, and Truckee Properties.

With Green Bucks, a little gift goes a long way. Show your support for this program by patronizing the participating businesses. If you are a business owner in the region, consider signing up to be a Green Bucks business. If you are interested, contact Amy Berry at aberry@tahoefund.org or Erin Casey at ecasey@truckeeriverwc.org.

How can you help?

Outreach group trying to unify environment message

A group at Lake Tahoe is working to pull together local agencies, organizations, and the private community in an effort to improve environmental stewardship.

The Lake Tahoe Outreach Committee (LTOC) hopes to create one unified stewardship campaign for the Tahoe region. Group members say that having a few clear instructions on what people can do to help is more effective than having a large number of sometimes disparate messages.

LTOC introduced the idea of a unified message at a recent workshop.

"By coming together around one common theme, we can teach more people about the importance of taking care of our environment to ensure its sustainability," LTOC member Amy Berry, CEO of the Tahoe Fund, said.

The group reasons that Tahoe offers outdoor access and experiences traditionally only found in national parks. With that access comes a responsibility to protect the natural environment.

"In a recent online survey of more than 630 people, 87 percent agreed that a coordinated environmental stewardship campaign would be valuable," Heather Segale, education and outreach director for the UC Davis Tahoe Environmental Research Center and a founding member of the outreach committee, said.

The LTOC said it was grateful to *Tahoe In Depth* readers who responded to the survey. The LTOC has taken on the responsibility of developing this new regional stewardship campaign, which will be used in regional organizations' education, promotion, and marketing materials.

The new campaign will be designed for use across multiple media, including: interpretive signage, websites, newspapers, brochures, in-store point of sale, posters, stickers, and classrooms. The project is made possible by a grant from the Martis Fund, Tahoe Fund, and LTOC partners. Additional funding may become available to expand the program, and add a website and mobile app.

For more information about the Lake Tahoe Outreach Committee, contact Kristi Boosman, partnerships and communications officer with TRPA at 775-589-5230 or via email at kboosman@trpa.org.

Fifth-graders Phoenix Jones and Emily Craig picking up Eurasian watermilfoil from the mouth of Taylor Creek, where the invasive aquatic weed was threatening to move into Lake Tahoe.

Students dig in and remove weeds

Meyers magnet school helps remove invasive plants from Taylor Creek

By Patrick Stone
Tahoe Regional Planning Agency

Working side-by-side with local biologists, fifth-graders from the Meyers Environmental Magnet School recently helped tackle the problem of aquatic weeds at the mouth of Taylor Creek.

The students spent a school day picking up pieces of Eurasian watermilfoil from along the sandy creek shore, learning firsthand about environmental impacts from aquatic invasive species like weeds and bullfrogs, and applying the ecology and math lessons that began in class.

Sarah Muskopf, left, and Patrick Stone explain why aquatic invasive species can harm Tahoe. "While they are learning, these students are also helping out in a huge way today," Muskopf said, "We have 120 hands here that are helping pick up fragments of milfoil that would otherwise go into the Lake."

Sarah Muskopf, an aquatic biologist with the U.S. Forest Service, explained to the students why invasive species disrupt the native ecosystem. With their feet in the water and their hands full of dripping wet weeds, the students answered questions about food webs, life cycles, and competition.

"It was great to pull a big bag of milfoil out of Taylor Creek because milfoil hurts the Lake and blocks the sun for native plants," Phoenix Jones said.

The students also received a lesson on measuring water quality and turbidity, an important monitoring element of aquatic invasive plant removal projects. The students learned how to measure and record water temperature and turbidity, applying their knowledge of such math terms as mode, mean, and median. The students also learned about Lake clarity and water quality, and how the aquatic weeds alter the environment by changing the creek bottom from sand to silt and muck.

"We're picking up the milfoil to help clarity and keep it from getting into Lake Tahoe," student Sequoia Woods said.

Continued on page 11

Field trips blend science, outdoors

From kindergarten to high school, students learning about Tahoe

By Beth Quandt
Lake Tahoe Unified School District

Each year dozens of Lake Tahoe students from kindergarten to high school get their hands dirty, their feet wet, and their imaginations stretched through a variety of field trips and programs that help them learn about the local environment.

The "Outdoor Explore!" field trip for Lake Tahoe students is held on the South Shore and North Shore annually. Students participate in three stations: "Trees Are Terrific," "Animals Are Amazing," and Service Learning. Transitions between stations will engage their senses so that the entire fieldtrip stimulates curiosity and wonder of the natural world.

The Children's Forest field trip for students in third and fourth grades is held on the South Shore at the Tallac Historic Site. Students rotate through three stations that cover "Trees are Terrific," "Ways of the Washoe," and "Founding Families." All activities are standards-based and interactive. This is the third year this program has been offered to students.

The "Trees Are Terrific" programs include engaging activities indoors and outdoors to teach students about local forest health and ecology. These programs have been a success in the schools for six years on South Shore and last year the first program was hosted on North Shore at Incline Elementary School.

On the South Shore, students from kindergarten to fifth grade also take part in "WOW (Wonders of Water)." This has been expanded to include three stations — "Wonders of Water," "Junior Botany," and one other grade-appropriate station. These are also based on state standards and give the students another opportunity to learn more about their local environment.

High school students from North and South Shore schools have the opportunity to take part in the Tahoe Basin Watershed Education Summit, which teams high school students, teachers, and resource specialists on an extensive watershed assessment in Blackwood Canyon. It includes several days of camping, service learning, scientific fieldwork, and data collection along with opportunities to see first-hand different career pathways.

A group of third- and fourth-graders (above) examine native shrubs during a Children's Forest field trip at the Tallac Historic Site. High school students (right) work on a research project at Blackwood Canyon during a session of the Tahoe Basin Watershed Education Summit.

For more information:

- **STEEC.org**
- **nteec.webs.com**

The North Tahoe Environmental Education Coalition promotes collaboration and education to enhance scientific and environmental literacy and foster stewardship in the Tahoe-Truckee community. Collaborating members of NTEEC offer a wide range of science, outdoor education, and environmental literacy programs for students of the North Tahoe and Truckee region to enhance existing curriculum and engage students in these subjects.

Most programs are based on Project Learning Tree, Project WET, and Project WILD curricula and meet California state content standards. Educational programs for students from around the Lake Tahoe region have been organized by the South Tahoe Environmental Education Coalition (STEEC) — which includes the Lake Tahoe Unified School District, Tahoe Resource Conservation District, the Lahontan Regional Water Quality Control Board, and the U.S. Forest Service among many others— and North Tahoe Environmental Education Coalition (NTEEC) — which includes Incline Village schools, Tahoe-Truckee Unified School District, UC Davis, Parasol AmeriCorps, and Sierra Watershed Education Partnerships.

STEEC and NTEEC are collaborative networks of more than 20 local agencies and organizations dedicated to bringing high-quality environmental education programs to all Lake Tahoe students.

Continued from page 10

The fifth-graders' contributions supported a lakewide effort to remove, control, and eradicate invasive aquatic plants from the nearshore environments of Lake Tahoe. The Forest Service conducted extensive surveys in 2013 to map the presence of species like Eurasian watermilfoil and bullfrog on National Forest lands.

The Tahoe Regional Planning Agency then contracted with commercial divers to remove Eurasian watermilfoil from Taylor and Tallac creeks.

The students had the opportunity to see the commercial divers working in the deep water while they did their part in the shallows.

"I learned that it's important to pull invasive weeds," student Jannie Boosman said. "If we just chop them up, the little pieces will float away and create even more milfoil!"

The work day was organized by the Forest Service as part of its environmental educational program.

"We can do this kind of stuff in the classroom but it doesn't have the same effect on the students," Lake Tahoe Environmental Magnet School teacher Bob Comlossy said. "Out here, you're looking at applications. It puts the lesson in context."

The students are planning to return to the Taylor Creek marsh in the spring to assess the population of bullfrog in conjunction with a Forest Service pilot project to remove bullfrog from the marsh.

How to do your part

There are many opportunities for residents and visitors to the Tahoe Basin to learn more about aquatic invasive species and help reduce their impacts. The best way is for everyone to practice clean, drain, and dry techniques when boating, paddling, swimming, or fishing to prevent the transfer of invasive hitchhikers. Volunteer opportunities also are available through the "Tahoe Keepers" and "Eyes on the Lake" programs, which are community-based efforts to reduce transport, monitor for the presence of, and remove aquatic invasive species in the Tahoe Basin. More information on how to get involved is available at TahoeKeepers.org and KeepTahoeBlue.org/our-work/eyes.

Basin drinking water an unusually pure resource

The Tahoe Basin is blessed with some of the cleanest tap water in the world; our tap water comes solely from rain and snowmelt. While other watersheds face declining tap water quality from industrial contamination, agricultural runoff, and sewage influx, Tahoe's history of clarity protection has yielded superior drinking water.

Tahoe tap water is so pure that six of Tahoe's municipal water systems hold a rare "filtration exemption" treatment permit. There are only 60 "filtration-exempt" systems in the country (out of approximately 160,000 public-water systems). Filtration exemption is granted only to systems with extremely pure source water and a high level of watershed protection in place.

About 50 percent of Tahoe's municipal tap water is drawn from Lake Tahoe through long intake lines. The other 50 percent is drawn from wells. Lake-sourced water is tested, then disinfected with ozone and ultraviolet treatment, and finished with a small dose of chlorine to maintain disinfection in the distribution system. Groundwater sources are monitored and disinfected with chlorine for distribution.

The Environmental Protecton Agency requires community water systems to publish a Consumer Confidence Report annually each June. The CCR reports sources used (i.e., rivers, lakes, reservoirs, or aquifers); any detected contaminants; compliance; and educational information. To view a report ask your provider or go to epa.gov/enviro/facts/sdwis/search.html.

Protecting Tahoe drinking water was behind the formation of the Tahoe Water Suppliers Association (TWSA) in 2003. TWSA members, the larger municipal water providers in the Basin who source their tap water from Tahoe, annually publish "The Tahoe Water Suppliers Association Annual Report," outlining collective watershed protection efforts and the ongoing high water quality it provides. For more information, visit TahoeH2O.org or call 775-832-1212.

Sewer system among world's best

Effort to protect Lake requires a highly sophisticated infrastructure

Kelli Twomey
Tahoe City Public Utility District

Although scientists have been studying and documenting how Lake Tahoe is affected by shoreline activities — from the construction of homes to the exhaust of cars — for years, one thing that became obvious long ago was the impact of sewage.

No one really likes to talk about sewage, but in the 1950s, the growing communities at Lake Tahoe talked about it a lot. As more and more homes were built in the 1950s and 1960s, and more and more homeowners installed septic tanks to treat their waste, planners and scientists became alarmed that Lake Tahoe would quickly become murky with algae if something wasn't done.

The result is that the Tahoe Basin today has some of the most sophisticated and technologically advanced wastewater treatment systems in the country. Public utility districts and general improvement districts in the Basin must comply with the Federal Clean Water Act and the 1968 Porter-Cologne Water Quality Control Act, which prohibit septic tanks, sewage outfall, and the in-Basin reuse of recycled water, regardless of the level of treatment.

Districts collect wastewater that drains into underground networks of pipes, wet wells, and pump stations. Extra safeguards are in place, including redundant pumps, redundant force mains, and redundant power sources, to transport the waste and ensure it does not escape into Lake Tahoe or the Truckee River.

Districts not only treat at a higher standard, but every drop of treated sewage must be transported and disposed of out of the Basin. This requirement results in a very complex and expensive process.

This wasn't always the case. The Tahoe City Public Utility District became the first utility at Tahoe to collectively treat sewage when it built a small treatment facility in 1954, and that plant was followed by others on the South Shore and Incline Village. But many property owners still weren't hooked up to a sewer system.

Lake Tahoe wastewater treatment systems use some of the most advanced processes in the world. The South Tahoe Public Utility District's plant, pictured here, has won numerous awards for excellence.

So in the late 1960s, the California Legislature banned cesspools and septic tanks and mandated that all effluent be pumped completely out of the Basin. Nevada followed suit a few years later.

Today, the Basin's waste is transported to wastewater treatment plants where cutting-edge technology, such as biological nitrogen removal, and nitrification and denitrification, are used to treat the wastewater. Visitors and residents can still play a role in protecting the Lake by protecting the sewer system and being careful about what is disposed of in the sink drain and the toilet.

Fats, oils, and greases, for example, are bad for sewers. Grease-clogged sewer pipes are an increasingly common cause of overflows, and sewer overflows and backups can cause health hazards, damage homes, and threaten the environment. Grease gets into the sewer from household drains and from poorly maintained grease traps in restaurants and other businesses. Once in the sewers, grease hardens into a solid, clinging to pipes and building up similar to how cholesterol forms plaque and clogs arteries.

The results can be not only raw sewage overflowing in your home or your neighbor's home, but raw sewage overflowing into streets and potentially the Lake; potential contact with disease-causing organisms; and an increase in operation and maintenance costs, which causes higher sewer bills for customers. Contact your local utility for "Sewer Smart" disposal options.

Waste system at a glance

- 39,284 sewer connections
- 2.54 billion gallons of sewage collected annually
- 702 miles of sewer pipeline
- 123 sewer pump stations
- 517 miles of pipes cleaned annually
- 69 miles of pipes televised annually

Keep the Lake and your homes safe

So-called 'flushable' wipes are being marketed more and more. The challenge is that wipes cannot break down, and our sewer lines and pumps are being clogged.

Be careful what you flush. Some examples of what NOT to flush down the toilet include:

- Any type of wipes even if the package says 'flushable'
- Paper towels
- Facial tissue (it isn't the same as toilet paper)
- Cotton swabs and cotton balls
- Candy
- Plastic
- Kitty litter
- Cigarette butts

Road crews on the front line

Balancing public safety with environmental concerns a challenge

By Jim Sloan
Tahoe In Depth

Roads have always played a major role at Lake Tahoe. With car travel being the primary mode of transportation for tourists, roadways are integral to the region's economy.

Roads also act as conveyor belts delivering stormwater runoff to the Lake. And since stormwater is the key driver of the Lake's clarity, cleaning roadway runoff is a top priority of the Environmental Improvement Program.

Keeping Tahoe roads open and safe during the winter months requires a challenging balancing act for Tahoe Basin road crews. They try to minimize the amount of sand and salt they apply so there is less trickling into the Lake. At the same time, they have to ensure that roads are clear and have safe, adequate traction for visitors and residents.

As a result of these sometimes-conflicting concerns, road crews in recent years have adopted innovative new practices. For example:

- The Nevada Department of Transportation (NDOT) utilizes special monitoring equipment embedded in roads in order to make precise snow-removal decisions, including when to use alternate de-icing chemicals. NDOT also uses a brine solution of salt and water, as well as other anti-icing agents and practices, to cut in half the amount of salt it needs to keep roads open.
- Caltrans carefully monitors certain Lake Tahoe tributaries downstream from roadways and reports the results to the Lahontan Regional Water Quality Control Board annually. The goal is to detect whether de-icing salts are contaminating water sources.
- The Lahontan Regional Water Quality Control Board reviews how much local governments spread on the roads, how much they sweep up, and how much is collected in sediment traps.
- Placer County changed its road sanding mix to coarser materials in 2013 in an effort to reduce up to 5,000 pounds of fine sediment from entering Lake Tahoe.
- Washoe County began using high-efficiency street sweepers many years ago to reduce the amount of fine particles flowing into the Lake via stormwater. The county also uses high tech traction sand spreading equipment to improve the precision and efficiency of road sanding.
- All roadway agencies have updated traction sand specifications and use materials that don't break down as readily into fine particles to improve water quality.

Photo copyright Ryan E. Pedone

A Caltrans truck pauses during snow removal operations along the shore of Lake Tahoe.

The alternative to using sand, salt, and other traction materials would be more road closures, more chain restrictions on mountain roads, more traffic backed up when tourists are trying to arrive or depart, and more wear and tear on roadways caused by chain-clad tires, which can cut groves into the pavement and eventually create unsafe conditions even in dry weather.

In an effort to remove road sand before it can be pulverized into dust or washed into the Lake, road crews in the Tahoe Basin in recent years have also started street sweeping as soon after a storm as possible.

High-efficiency street sweepers are effective at recovering fine sediment from roadways because they act as vacuums.

A South Lake Tahoe street sweeper prepares to head out to clean up road sand.

Their advanced air-filtration systems capture large and fine sediments, but this technology comes with a hefty price tag. One sweeper costs approximately $250,000. Most roadway agencies use these high-efficiency sweepers, which many believe is a factor in recently improving Lake clarity trends.

Treating roadways with stormwater collection and infiltration systems is the other key action being taken by public works crews throughout the Tahoe Basin.

Local governments, CalTrans, and NDOT have installed erosion control measures on approximately 628 miles of roads since 1997 at a cost of hundreds of millions of dollars. These federal, state, and local funds are part of the $1.7 billion collectively invested by public and private sources in the EIP over the last 15 years.

A Caltrans snowblower at work widening a road.

Reducing road salt in effort to save trees

One of the more difficult challenges facing wintertime road crews at Lake Tahoe is how to minimize the damage road salt can cause to roadside trees and vegetation.

Recent studies have shown that road salt can damage road-side trees. In some cases, the trees are already weakened by drought or by a fungus.

Transportation officials have known for years that salt can damage trees, and they are always looking for alternatives that will allow them to reduce the amount they use on icy roads.

In 1996-97, for instance, some Tahoe Basin road crews began applying a liquid brine to pavement prior to storms to delay ice pack build up. This allowed them to cut the amount of salt applied in half.

The Nevada Department of Transportation also dispenses a salt-and-sand mixture that's dampened with brine, creating a heavier sand that is less likely to bounce off the pavement and onto nearby trees and soil.

The severity of the damage caused to trees by road salt is often influenced by how much the salt is diluted by rain or snow. During drought years, the salt that reaches the trees may be more concentrated than during years when there is more snow.

Report outlines Tahoe's warming future

According to UC Davis' Tahoe Environmental Research Center, Lake Tahoe is likely to experience big changes as a result of a warming climate, including:

- Increases in air temperature as high as 10 degrees F.
- A 10 to 20 percent decrease in percentage of total precipitation falling as snow, which means less water will be stored and the severity of droughts will be magnified.
- More streams drying up and low-flow conditions developing in other streams.
- Extended periods where the Lake ceases to mix to the bottom, resulting in oxygen depletion in deep waters and an increase in sediment nutrient release from internal loading.

The report also found that the Lake is already showing signs of changing. For instance, the water temperature in the Lake has been slowly increasing, a situation that can alter the chemical, physical, and biological characteristics of the Lake. Other changes include:

- The daily minimum air temperature at Tahoe City has increased by 4 degrees and the long-term trend in daily maximum air temperature has risen by 2 degrees.
- Snow as a fraction of total precipitation has declined, from an average of 51 percent in 1910 to 36 percent today.
- The number of days when air temperatures averaged below freezing at Tahoe City has declined by about 25 days since 1911.
- Since 1961 the peak snowmelt has shifted earlier an average of 2 weeks (16.3 days).

"This extensive data record has allowed us to clearly show that climate change has affected the Lake, the water cycle in the surrounding watershed, and the entire Lake ecosystem," the report said. "Short-term monitoring, even on a decadal scale, reveals little about the environmental response to a changing climate; however, using the long-term record we are able to clearly see an alteration of the Lake's environment."

Climate change will alter Lake

Photo by Scott Hackley, TERC

Scientists predict Lake Tahoe will face not only warmer temperatures but extended periods of drought as well.

New report suggests shorter winters, more rain and less snow

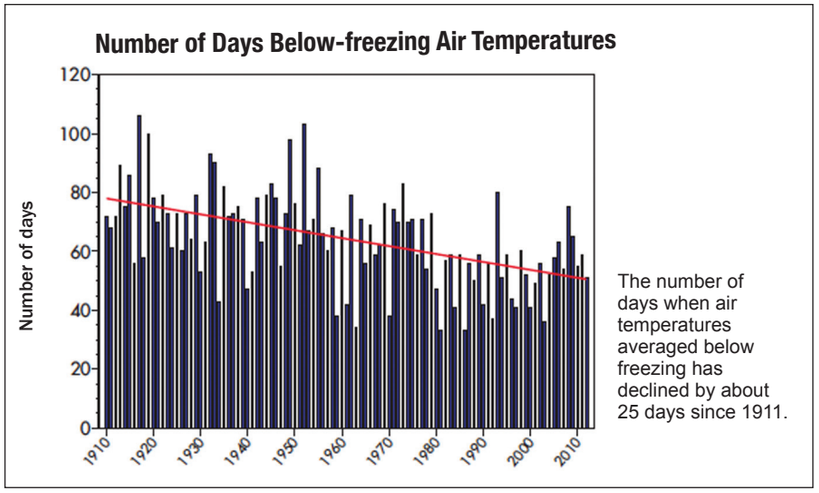
By Jim Sloan
Tahoe In Depth

A report prepared by UC Davis' Tahoe Environmental Research Center (TERC) has summarized more than 50 years of scientific data on climate change at Lake Tahoe, which shows water temperature climbing and less precipitation falling as snow.

The report, "Tahoe: The State of Climate Change 2013," warns that Tahoe is facing increased algal growth, more threats from aquatic invasive species, and longer drought periods that are likely to drop the Lake below its natural rim for years and leave shoreline piers and boat ramps high and dry.

Part of the report addresses how much climate change needs to be considered in ongoing efforts to protect and manage the Lake. That research was funded by a grant from the Southern Nevada Public Land Management Act and was conducted in collaboration with scientists from both private and public organizations.

Those results have been published as a series of five papers in the science journal *Climatic Change*.



The number of days when air temperatures averaged below freezing has declined by about 25 days since 1911.

The climate change study comes on the heels of a second straight year of clarity improvements at Lake Tahoe. According to TERC's "State of the Lake Report," the annual average clarity at Tahoe improved by 6.4 feet over the previous year to 75.3 feet.

The summertime clarity at Tahoe improved by more than 13 feet. The report noted that while "certainly encouraging," the good numbers don't necessarily signal a trend.

"Examination of the long-term trend shows that there have been many periods of apparent improvement only to be overtaken by continued decline," the report said.

While the Lake in a warming climate faces many threats, one of them is not from nutrients and sediment. Those loads are not expected to increase substantially. The report concluded that overall fine sediment load reductions could be achieved if stormwater treatment facilities are sized properly.

New report looks at lakeshore health

By Justin Broglio
Desert Research Institute

The DRI research vessel used to collect data on the nearshore environment.

A new report on the ribbon of shallow water along the shoreline of Lake Tahoe shows that conditions in this most visible part of the Lake vary widely and need to be more closely monitored.

The Lake Tahoe Nearshore Evaluation and Monitoring Framework identifies important environmental changes in the nearshore area.

This is where pollutants flowing in from the land tend to concentrate and where visitors to Lake Tahoe are most likely to notice such ecological changes as prolific algae on submerged rocks, invasive aquatic plants and animals, and reduced visibility.

"Changes in nearshore conditions at Lake Tahoe have become evident to both visitors and residents of the Tahoe Basin, with increasing stakeholder interest in managing the factors that have contributed to apparent deterioration of the nearshore environment," the report notes.

The report, developed by more than a dozen scientists and technical advisors from the Desert Research Institute, the University of Nevada, Reno, and UC Davis, was prepared for the U.S. Forest Service and presented to the Tahoe Regional Planning Agency Governing Board in October and the Lahontan Regional Water Quality Control Board in November.

Historically, water clarity has been tracked at the center of Lake Tahoe, but researchers noted that most people never get out into the middle of the Lake. They do, however, swim and kayak in the water or hike along the lakeshore, and experience the nearshore more directly than the middle of the Lake.

One of the strongest indicators of problems in the nearshore area is the accumulation of attached algae, known as periphyton, on natural rock surfaces, piers, boats, and other hard-bottom substrates. Certain types of pristine lakes, like Tahoe and Crater Lake, in their natural state, do not produce a lot of algae because nutrient concentrations are low. But researchers started noticing attached algae in the 1960s, coinciding with a vigorous development spurt at Tahoe that caused sediment to wash into the Lake.

"Widespread periphyton growth in the nearshore during the spring remains a characteristic of the shoreline today where thick green and white expanses of periphyton biomass often coat the shoreline," the report noted. "Excessive growth significantly impacts the aesthetic, beneficial use of the shore zone."

The report explains for the first time the unique aspects of the nearshore environment. It evaluates existing California, Nevada, and TRPA standards and thresholds related to this region; presents a new conceptual model for describing the dynamics of nearshore environmental health; and proposes a monitoring strategy intended to help resource managers identify the most meaningful physical, chemical, and biological indicators of healthy nearshore conditions.

Scientists define the "nearshore" for monitoring and evaluation purposes, as the zone from the low water elevation (6,223 feet), or the current shoreline, to the mid-summer thermocline, which has a depth of approximately 69 feet, and at minimum a distance of 350 feet from shore.

A Nearshore Agency Working Group comprised of key staff from the California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board), the Nevada Division of Environmental Protection, TRPA, and the EPA participated throughout the process, communicating agency needs and supporting the scientists with relevant information.

The report represents initial collaborative steps between the science community and resource management agencies to develop an integrated approach for assessing and managing the nearshore ecology.

The nearshore environment is inherently complex because it is subject to lakewide and localized influences such as stormwater runoff from the surrounding watershed.

Therefore, the report recommends that a finer scale of evaluation and monitoring is necessary in this zone, especially for the nuisance blooms of attached algae found on rocks and other hard surfaces in the nearshore.

"Things are changing quickly," said Alan Heyvaert, a DRI scientist and principal investigator for the study.

"This is the area of the Lake that has become a focus. We know what's been happening in the deep part of the Lake. That's what has driven a lot of the action here over the last several decades. As conditions improved, focus has shifted to the nearshore."

The report also points out that the Lake Tahoe Total Maximum Daily Load (TMDL), a restoration plan for Tahoe's clarity approved in 2011, will provide benefits to nearshore conditions. While the Lake's clarity is expected to improve from implementation of watershed best management practices, environmental improvement projects, and other actions, additional monitoring and research is necessary to fully understand why the nearshore has deteriorated and what strategies are the most effective to address the problem.

Sampling would focus on factors affecting clarity

Researchers said they would like to see nearshore sampling done in various areas around the Lake at least four times a year. In addition to existing sampling for attached and free-floating algae, new measurements would focus on nearshore water clarity, attached algae, and the status of insects, fish, and crayfish.

Monitors also test for toxins and pathogens. The findings and recommendations of the report are expected to support several needs by:

- Providing baseline data and analysis to inform revisions or assessments of relevant state and TRPA standards;
- Supporting the development of products for the Tahoe Monitoring and Evaluation Program;
- Tracking the effectiveness of the Tahoe Total Maximum Daily Load Program and other Environmental Improvement Program efforts related to nearshore conditions, and detection and management of aquatic invasive species in the nearshore.

Current work on nearshore

- Monitoring of attached and free-floating algae is under way at a cost of $150,000 per year. Monitoring investments of more than $1 million per year are in place for Lake Tahoe's deep water zone, tributaries, and urban runoff sources.
- Lake Tahoe's comprehensive Aquatic Invasive Species prevention program is one of the most rigorous in the United States. Other projects to control invasive species are improving nearshore conditions.
- Updated Regional Plan land-use policies are designed to reduce vehicle emissions and restore stream environment zones to benefit the nearshore.

Study provides baseline

The nearshore report is a synthesis of existing information and summarizes the research needs related to monitoring and management of the nearshore. For the first time, Lake Tahoe water quality agencies have a solid baseline of information from which to move forward on nearshore issues. The $225,000 study, funded by sales of federal land in southern Nevada and academic institutions, improves on what researchers say has been sporadic monitoring of nearshore conditions in the past.

Local Area Plans offer many advantages

According to the new Regional Plan, if a local government creates an Area Plan that meets or exceeds regional environmental standards, as Douglas County and the City of South Lake Tahoe did earlier this year, TRPA can adopt it as part of the Regional Plan and transfer more responsibility for environmental safeguarding and permitting over to the jurisdiction.

Projects of a certain scale will still be reviewed by TRPA as well, but the move is seen as common sense in an era when environmental technologies and low-impact design are broadly understood.

"Local governments around this Lake have been at the forefront of environmental progress for decades and TRPA has been training their staff and reviewing many of their processes for just as long," TRPA Executive Director Joanne Marchetta said. "Our regional goals can be achieved more effectively if communities customize their approach to environmental redevelopment. Area plans can benefit community character as well as environmental and economic sustainability."

Area plans also come with allowances for additional height and density in targeted commercial areas if restoration of sensitive land is proposed with a redevelopment project. The Douglas County South Shore and the City of South Lake Tahoe Tourist Core area plans were both approved by TRPA in 2013. Area plans for the Meyers downtown area in El Dorado County and Placer County are expected to come forward in 2014. Washoe County is developing an Area Plan for Incline Village.

In the future, any local government can apply to expand their area plans to include residential areas as well, as Placer County is currently proposing in its area plan. The addition of residential areas further streamlines the permit process by creating a one-stop-shop for most homeowner permits.

New rules give homeowner incentives

Plan seeks to spark private investment in environmental improvements

By Jeff Cowen
Tahoe Regional Planning Agency

Lake Tahoe communities could be poised for an environmental renaissance in the coming decade as changes to the regulatory framework adopted last year by the Tahoe Regional Planning Agency (TRPA) are now in effect that encourage more property owners to invest in lake-saving environmental upgrades to existing buildings. The new rules adopted with the Regional Plan Update give many homeowners regulatory relief and offer incentives for sensitive land restoration.

Public agencies have invested extensively in environmental restoration over the last 15 years, but private investments in such things as stormwater filtration, defensible space, and scenic improvements are often challenged by complex reviews. The Regional Plan seeks to correct that by smoothing out the permit process for homeowners and encouraging redevelopment projects to include removal of existing development from marshes, meadows, and outlying areas.

Region-wide homeowner incentives took effect this summer with new TRPA ordinances that change how some structures are counted as land coverage. Land coverage in the Tahoe Basin is the measurement of all impervious surfaces that can be put on a parcel. TRPA requires some open space be maintained because studies show the more land coverage in a watershed, the lower the water quality. Until this year, every square foot of paved or compacted surface and all structures, including low decks, counted toward each parcel's maximum allowance.

Under the new rules, TRPA can grant land coverage exemptions if the property is considered non-sensitive and water quality Best Management Practices (BMPs) have been completed. In some cases, a property owner may be able to apply for a BMP certificate as part of a project. If the criteria are met, new decks up to 500 square feet and structures like garden sheds on non-permanent foundations can be exempt from land coverage limits.

Under the new rules, TRPA can grant land coverage exemptions if the property is considered non-sensitive and water quality Best Management Practices (BMPs) have been completed for the property.

Larger decks can be partially exempt on a sliding scale, as can surfaces paved with pervious material like paving stones.

Certain documentation, permits, and verifications are still required by TRPA and the local building department, so homeowners wanting to take advantage of the new rules should plan on doing some research or applying for verifications from TRPA or the local building department. TRPA has information and instructions on its website, www.trpa.org, to help customers prepare.

"We wanted to be able to give some homeowners a break for installing their BMPs and make it easier for people to do a small remodel or even realize a minor addition to their home," TRPA Executive Director Joanne Marchetta said. "The new Regional Plan recognizes that certain types of redevelopment and small-scale home improvements are critical if we are to work together to move the needle on water clarity."

The recognition that certain types of redevelopment are beneficial is a second critical component of the Regional Plan, according to TRPA.

In February, a lawsuit was filed in federal court against the updates to the plan. No injunction has been ordered and the new Regional Plan is in full effect.

Although the new plan was supported by a broad coalition of environmental groups, homeowners, and state and local leaders, the Sierra Club and Friends of the West Shore do not support the updated plan.

Gore urges Tahoe Summit on sustainability

Tahoe benefitted from Clinton-Gore efforts that began 16 years before at first gathering

By Jim Sloan
Tahoe In Depth

Former Vice President Al Gore returned to the shores of Lake Tahoe this summer to encourage local residents, officials, and public agencies to continue the restoration he and President Bill Clinton inaugurated 16 years before.

Gore, the keynote speaker at the 2013 Lake Tahoe Summit on Aug. 19, said he was impressed with the success of environmental improvement projects at the Lake, but encouraged his audience of more than 700 people who attended the summit at Sand Harbor to "renew our commitments."

California Gov. Jerry Brown, left, Nevada Gov. Brian Sandoval and Sens. Dianne Feinstein, D-Calif., and Harry Reid, D-Nev. listen to former Vice President Al Gore address the Tahoe Summit.

Gore, a champion of efforts to reverse global warming, urged his audience to also take on the issue of climate change. Tahoe is already feeling the effects of a warming climate, and Gore warned that ongoing efforts to reverse Lake Tahoe's loss of clarity could be undermined by those climatic trends.

"All of the good that has been done and will continue to be done could be overturned ... unless we find a way to come together and deal with this problem," Gore said.

Sen. Harry Reid said protecting Lake Tahoe became a national priority in 1997 and, since that time, $1.7 billion has been spent on environmental projects from both public and private sources.

The first summit spurred the public-private partnership that triggered those investments.

In addition to ongoing scientific research, those efforts have included installing stormwater runoff controls along more than 600 miles of roadways; treating more than 54,000 acres of forest to reduce the risk of catastrophic wildfires; and restoring nearly 16,000 acres of wildlife habitat, including 1,500 acres of streams and wetlands in the upper watershed that help filter pollutants before runoff gets to the Lake.

In August, Reid and Sen. Dean Heller of Nevada and Sens. Dianne Feinstein and Barbara Boxer of California introduced the Lake Tahoe Restoration Act, a measure that seeks the reauthorization of $415 million to continue environmental work. Rep. Mark Amodei, R-Nev., along with several House co-sponsors, introduced a companion bill in October.

Tahoe Regional Planning Agency Executive Director Joanne Marchetta traced the environmental and political history of the Tahoe Basin, noting that her agency – born 45 years ago in a "grand experiment" between California Gov. Ronald Reagan and Nevada Gov. Paul Laxalt – has been "the red hot crucible for discord but also the fulcrum for solutions and common ground on whatever the emerging issues of the day may be."

"The history we will write of Tahoe as a place need not be only one of discord and difference but a rich story of strikingly successful conservation fueled by the strength of the coalition we have built and will continue to foster," Marchetta said.

California Gov. Jerry Brown and Nevada Gov. Brian Sandoval both reaffirmed their respective states' commitment to the restoration of Lake Tahoe.

Both California and Nevada were engaged in the update of the Lake Tahoe Regional Plan and spoke of the importance of moving forward collaboratively.

"We can celebrate, we can look back on the commitments that have been made and pursued, but we have to acknowledge that now is the time to renew our commitments, to go the rest of the way, to make sure we win the battle for Lake Tahoe's future."

Former Vice President Al Gore
Sand Harbor, Aug. 19, 2013

LAKE TAHOE EIP
LAKE-FRIENDLY BUSINESS
2013

Resources for installing Best Management Practices

Bank of the West has a "Flex-Loan" program for local businesses that qualify and need to finance their Best Management Practices (BMPs) in the Lake Tahoe Basin. The "Flex-Loan" allows a business customer to have a line of credit for a specified time period, and then have the line of credit converted to a fixed-rate commercial loan. This may be advantageous for a commercial client, since the owner may not have control over when their BMPs can be started or completed due to weather, workforce controls, etc. Bank of the West's "Flex-Loan" allows these businesses to utilize the line of credit as they complete their BMPs and then move their ending balance to a competitive fixed-rate loan. For more information call Eric Campbell at 530-541-3390.

BMP Designer

Residential homeowners now have a new tool to help them plan their BMPs — The BMP Designer — a Geographic Information System (GIS)-based online tool that allows property owners and contractors to design their own residential stormwater and erosion control Best Management Practices (BMPs). The BMP Designer is available free of charge at tahoebmp.org. For questions call 775-589-5202 or email bmp@trpa.org.

BMP DESIGNER

The Bank of the West in Tahoe City (left) and in South Lake Tahoe (right) are designed with Best Management Practices — landscaping that infiltrates stormwater, preventing it from reaching the Lake.

Businesses gaining recognition

'Lake-Friendly' sticker signals an effort to help Tahoe environment

By Kristi Boosman
Tahoe Regional Planning Agency

Kingsbury Hardware's slotted channel drain (inset) helps collect pollutants and direct them to a pretreatment device.

Next time you visit your Lake Tahoe bank or hardware store, check to see if they have a window sticker identifying them as a Lake-Friendly Business. If they do, you can be assured that those business property owners have installed Best Management Practices and have taken steps to help protect Lake Tahoe.

The Tahoe Regional Planning Agency launched the Lake-Friendly Business Program last summer. The goal is to encourage businesses to install BMPs and to give recognition to those who already have.

Two such businesses are Bank of the West, with branches on both the South and North shores of Lake Tahoe, and Kingsbury Hardware, located at 264 Kingsbury Grade at the Shady Lane Commercial Complex at Stateline.

Bank of the West has community roots dating back nearly 135 years, and is the third-largest commercial bank in California with Tahoe area locations in South Lake Tahoe, Kings Beach, Tahoe City, and Truckee.

Corporate responsibility is an essential element of Bank of the West's business philosophy. They believe in strengthening their communities through investments of human and financial capital – and within underserved neighborhoods – and have dedicated $75 billion in loans, investments, and charitable contributions to assist in those areas.

Their BMPs include curbs and gutters and slotted channel drains to capture all of the runoff from the parking area. That runoff is then conveyed to inlets with pretreatment devices and discharged into infiltration basins. The roof dripline is treated with an infiltration trench, and boulders were installed to prevent off-pavement parking.

Kingsbury Hardware, formerly Scotty's, has been in business more than 20 years. Its property has BMPs that convey parking lot runoff to a pretreatment device to remove oil, grease, and fine sediment. After pretreatment, the runoff flows to an open basin where it is infiltrated. The BMPs were installed as part of a project that includes approximately 15 parcels, all owned by Quigley Investment Company.

Installing and maintaining BMPs is an important way for property owners to help protect Lake Tahoe. Science indicates that 72 percent of the fine sediment polluting the Lake comes from our old built infrastructure like buildings and roads. BMPs are critical to protecting the clarity of Lake Tahoe by minimizing soil erosion and filtering or infiltrating polluted stormwater before it reaches the Lake.

Not only do BMPs help protect Lake Tahoe, they can also improve the look and value of local businesses and enhance the larger community.

Other Lake-Friendly Businesses include: Dr. Frederick Wenck DDS, Alpine Realty International, TJ Maxx, Integrated Environmental Restoration Services, League to Save Lake Tahoe, ReMax Realty, and Youth, Sports and Recreation. If you're ever in those businesses, make sure to thank them for being Lake friendly.

To find out more about becoming a Lake-Friendly Business, please visit tahoebmp.org or call 775-589-5202 or bmp@trpa.org.

Secretive hares are hard to find

A subspecies of the snowshoe hare is found throughout Sierra

By Mark Enders
Nevada Department of Wildlife

Although thousands of people head into the mountains around Lake Tahoe every year to ski, snowshoe, hike, or mountain bike, not many are lucky enough to catch a glimpse of the Sierra Nevada snowshoe hare (*Lepus americanus tahoensis*).

That is no surprise, since they are small, nocturnal, and very well-camouflaged. This subspecies of snowshoe hare can be found throughout the Sierra Nevada, from Mount Lassen to Mammoth Lakes, yet very little is known about this secretive animal.

Dating back to the 1940s, residents of the Nevada side of Lake Tahoe had reported seeing snowshoe hares in the east side's mixed conifer forests, but a general lack of data and confirmed observations within Nevada's boundaries led many to consider them absent from the east side of the Lake for years. After all, Nevada ranks high for number of species extinctions in the U.S., and suitable habitat for snowshoe hares (i.e., dense riparian thickets) is relatively rare in the Carson Range.

In 2006, Nevada Department of Wildlife (NDOW) biologists began searching the Nevada side of Lake Tahoe for evidence of snowshoe hares, and finally captured photographs of them in the Carson Range. Since then, snowshoe hares have been documented at 11 locations along the east shore, from Mount Rose Highway to Kingsbury Grade, at a wide range of elevations: from 8,434 feet near Marlette Lake to 5,211 feet along the lower Franktown Creek drainage.

Due to their uncertain distribution and population status, snowshoe hares have a state conservation status of "possibly imperiled" in California and "vulnerable" in Nevada, and, in 2012, the species was included in Nevada's revised Wildlife Action Plan, which is the state's planning document for wildlife conservation. This has opened the door for future research on snowshoe hares in Nevada, and NDOW is currently engaged in snowshoe hare studies that will help determine their distribution, abundance, and habitat requirements in the Carson Range.

Annual winter track surveys, along with remote cameras, continue to confirm the presence of snowshoe hares in different parts of the Carson Range. A newly developed pellet-count survey will allow NDOW to estimate the population size of Nevada's snowshoe hares by counting hare pellets in systematically arranged study plots around the east shore.

In the future, a radio-telemetry study will help NDOW determine habitat use and movement patterns of individuals in both winter and summer. There is a genuine need for snowshoe hare field studies on both sides of the Tahoe Basin, but in Nevada, where snowshoe hares only occur within a 40-mile stretch of the Carson Range – landlocked by heavily used highways, urban development, and nonstop recreation – the needs are clear.

A Sierra Nevada snowshoe hare (above) was photographed in 2006 by a remote camera in the Bliss Creek drainage. Elsewhere, Sierra Nevada snowshoe hare tracks were discovered during winter track surveys in the Carson Range (below).

Land managers must assess many things when making important decisions about our natural resources: forest health, wildfire protection, aesthetics, economics, and, of course, wildlife habitat. With a better understanding of the specific needs of Lake Tahoe's many wildlife species, including snowshoe hares, we can continue to manage our backcountry with our best foot forward.

For more information on Nevada's Wildlife Action Plan, please visit: ndow.org

NEWS BRIEFS

Bag ban adopted

City of South Lake Tahoe officials have adopted a new ban on plastic single-use carryout bags. The ban will go into effect on Jan. 15 for grocery stores and food vendors, and on Oct. 15 for remaining retail establishments.

Businesses that get 90 percent or more of their revenue from the sale of food prepared on site but eaten on or off premises are excluded from the ban. Nonprofit charitable organizations that reuse or recycle donated goods or materials are also exempt.

Plastic bags used to package or carry produce, bulk food, or meat products to a point of sale; hold prescription medication; or segregate goods are also exempt.

Was that a rare fox?

Biologists are trying to determine if a fox spotted at Donner Lake is a native species.

California Department of Fish and Wildlife officials say the fox was reported on Oct. 31 and has been seen several times on Donner's north shore. Biologists will use a DNA test on hair, scat, and a chewed pine cone to determine if it is a nonnative red fox from California's lowlands or a native Sierra Nevada red fox.

The two species look similar, having large, white-tipped tails and black markings behind the ears as well as black legs.

The Sierra Nevada red fox is very rare. There may be fewer than 50 around Lassen National Park and Sonora Pass, and scientists didn't think there were any in the Tahoe area at all.

Bike path earns grant

The California Natural Resources Agency (CNRA) has awarded the Tahoe City Public Utility District's Homewood Bike Trail project a $350,000 grant.

The CNRA Environmental Enhancement and Mitigation Program provides grants to local, state, and federal governmental agencies and nonprofit organizations for projects to mitigate environmental impacts caused by new or modified state transportation facilities.

The Homewood Bike Trail is a 1-mile stretch between Cherry and Fawn streets along Highway 89. Construction is expected to start in 2014, and will complete the bike trail network from Tahoe City to Sugar Pine State Park on the West Shore.

Information on area cross-country ski trails

Camp Richardson
camprichardson.com/recreation/winterspring-recreation
800-544-1801
Adult Day Pass - $19

Bijou Community Park
tahoesouth.com/play/ski_snowboard/bijou_cross_country
530-542-6056

Kirkwood
winter.kirkwood.com/site/xc/xc-center
209-258-7248
Adult Day Pass - $24

Granlibakken
granlibakken.com/ski_snowplay.php
877-552-6301
Adult Day Pass - $30

LTCC Nordic Center
ltcc.edu/communityeducation
530-541-4660 ext. 718
Adult Day Pass - $5

Northstar
northstarcalifornia.com/info/ski/crosscountry.asp
530-562-3270
Adult Day Pass - $29

North Tahoe Regional Park
northtahoeparks.com/north-tahoe-regional-park.php
530-546-5043
Only Cost is Parking - $3

Royal Gorge
royalgorge.com/home
530.426.3871
Adult Day Pass - $28 ($31 on Holidays)

Squaw Creek
squawcreek.com/lake-tahoe-california-skiing.php
530-583-6300
Adult Day Pass - $20

Tahoe Donner
tahoedonner.com/cross-country
530-587-9484
Adult Day Pass - $27

Tahoe Cross-Country Ski Area
tahoexc.org
530-583-5475
Adult Day Pass - $24

LTCC to host cross-country skiing

Groomed, 7-kilometer trail system to open in meadow near campus

By Michel Wigney
Tahoe Regional Planning Agency

When the cross-country ski center at Spooner Lake closed last year, most South Tahoe Nordic skiers were discouraged about the loss of ski trails so close to town.

But Tyler Cannon, the owner of Sprouts Natural Foods Café, was inspired. He went out and purchased Spooner's grooming equipment and immediately set about finding a place to establish a community ski center.

He found it at Lake Tahoe Community College, where Community Education Director Megan Waskiewicz was a large part of the organization, administration, and implementation of the track. Together, she and the volunteers plan to open the LTCC Nordic Center in December.

Part of the LTCC Nordic Center trail runs along Trout Creek in South Lake Tahoe. The map below shows a rough outline of where the trails will be located.

The center will feature approximately 7 kilometers of cross-country ski trails for both skaters and striders in the meadow behind the Demonstration Garden on the south shore campus.

The trail will be located entirely on LTCC property on trails that already exist and are open to the public during the spring, summer, and fall, displaying features like the Washoe Indian grinding stone, Trout Creek, as well as beautiful views of the surrounding peaks. Now these can be enjoyed year round.

The operation is staffed entirely by volunteers interested in promoting the local cross-country ski area and facilitated by LTCC. Grooming equipment is kept on site and grooming and weather conditions will be updated at facebook.com/LTCCConnect. According to the volunteers, it won't even take much snow to make such recreation possible because trails are already mostly free of rocks, debris, stumps, and other obstacles that would require a deep snowpack to cover. This aspect makes it possible for the trail to be enjoyed for most of the winter and worthwhile to invest in a pass if you participate frequently.

The LTCC Board of Trustees formalized the formation of the Nordic Club recently, and it was agreed the college's CONNECT Community Education program will run the center and pass registration.

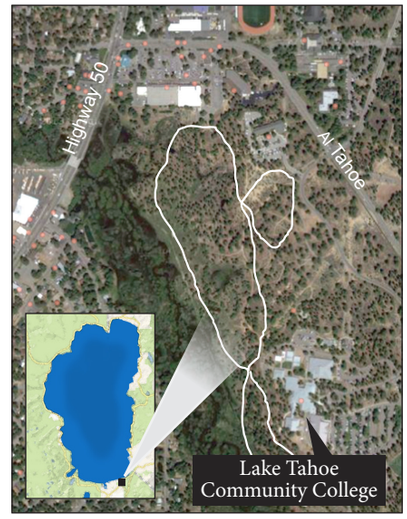
Season or day passes are available for purchase online at CONNECT Community Education through the college's website. A family season pass (up to six) can be purchased for only $49, an individual season pass is $29, and day-use passes are $5.

A map of the trails can also be found online or picked up in the office at the college.

As an additional convenience for those who aren't able to make it into the office to pick up their passes, a receipt can be printed online.

The primary access to the trail system is the main LTCC parking lot located in front of the physical education building, with the trails conveniently accessible to the left side of the lot and the library.

According to Cannon, though, "the best part is that you wouldn't even know that it's in the middle of town. The setting is spectacular." The trail backs up to the Tahoe Center where Ross and the Cork & More are located, but you can barely see any evidence of the city while you're in the meadow.



The Nordic Center is always looking for volunteers to help run the center and maintain the trails. Revenues from season passes will cover administrative and operating costs and program development. CONNECT plans to offer 'Learn to Ski' workshops for both children and adults.

For information on passes, visit ltcc.edu/communityeducation or call 530-541-4660 ext. 718. For trail conditions, see facebook.com/LTCCConnect.

Rim Trail expands offerings

Two major projects, Daggett and Rim to Reno, recently completed

By Mary Bennington and Michel Wigney

The Tahoe Rim Trail, hiked by people from all over the world, is a product of 200,000-plus hours of community love and labor. The Tahoe Rim Trail Association (TRTA) is the 501(c) 3 nonprofit charged with maintaining this Tahoe landmark. It is dedicated to maintaining and enhancing the Rim Trail, practicing and inspiring environmental stewardship, and promoting access to the beauty of the Lake Tahoe region.

The group was formed in 1981 to help design and construct the Rim Trail in collaboration with the U.S. Forest Service and Nevada Division of State Lands. The 165-mile loop, which travels along the ridge tops surrounding the Tahoe Basin, was completed in 2001. Since completion, there have been continued efforts to improve the trail's sustainability and reroute sections off of roadways as well as provide guided hikes, youth programs, and backcountry skills courses throughout the year, in snow or sunshine.

Improving the Tahoe Rim Trail is a constant effort, and in the past two years, the organization and its volunteers have completed two major projects, Rim to Reno and the Daggett Summit Reroute. The Rim to Reno project rerouted trail off the Relay Ridge road and now connects to the Thomas Creek trail in Southwest Reno, adding more than 20 miles of trail.

The completion of the Daggett Summit Reroute Project was celebrated in 2013, after 10 years of planning, permitting, and 40,000 volunteer hours. This trail project moved 4 miles of existing trail off paved roads and added 16.4 miles of new trail, including a 7-mile connection between Kingsbury north and south trailheads, a 6.5-mile loop with beautiful vistas, and a 3.4-mile connector to Van Sickle Bi-State Park in Stateline.

A wide variety of public programs are provided, too, which encourage people of all abilities to get out on the trail. Public hikes are offered throughout the year and include interpretive hikes with experts in wildflowers, geology, and wilderness survival to add to the experience.

A group of snowshoers gets ready to hike Tahoe Meadows on National Winter Trails Day 2013.

For locals and visitors looking for winter fun, guided snowshoe hikes are offered from January to March. Kick off these winter adventures with TRTA and REI at National Winter Trails Day on Jan. 11 at Tahoe Donner Cross County Ski Center in Truckee. Two interpretive hikes, of easy to moderate difficulty, will be offered on the North Shore and one will leave from Van Sickle Bi-State Park on the South Shore. This is a great way to get the family out to learn about safe enjoyment of the winter wonderland to be found on the Tahoe Rim Trail.

This year more than 500 participants joined a new program, the Tahoe Rim Trail Challenge. Hikers experienced some of the finest day hikes on the Rim Trail, enjoyed the healthy benefits of outdoor recreation, and kept on the lookout for the small stuffed marmot hidden on the path.

The 2014 Tahoe Rim Trail Challenge will offer two levels of challenge. So those who want to test their mettle will be able to tackle more adventurous challenges. Several local corporations, including NV Energy, International Game Technology, Desert Research Institute, and Spin Games, sponsored their employees to join the challenge as a workplace wellness effort.

In addition to locals, professionals, and visitors, inspiring the next generation to take part is another important goal of the Rim Trail Association. This year, more than 500 new young stewards for Lake Tahoe were added through the Rim Trail Association's Trailside Education Program and Youth Backcountry Camps. Youth Backcountry Camps for 2014 will include two three-day camps for ages 12-14 and two five-day camps providing participants ages 14-17 with Wilderness First Aid certification, backpacking basics, and outdoor leadership. TRTA provides all the gear, food, and instructors.

This summer, hikers were treated to "Where's McLeod?" give-away days and kept their eyes peeled for a stuffed marmot.

For more information or to sign up for these programs, visit the Tahoe Rim Trail's website: tahoerimtrail.org or call (775) 298-4485.

Mary Bennington is the Executive Director of the Tahoe Rim Trail Association and Michel Wigney is a legal and communications intern at the Tahoe Regional Planning Agency.

Upcoming TRTA Activities:

National Winter Trails Day
January 11, 2014
Tahoe Donor XC Ski Center

Public Snowshoe Hikes
January – March 2014

Backcountry Skills Courses:
Snow Camping 101
March 29-30, 2014

Backpacking 101
June 21-22, 2014

Wilderness First Aid
March 2014

Wilderness First Responder Course
April 2014

Youth Backcountry Camps
July 2014
Registration opens Feb. 5, 2014

2014 Tahoe Rim Trail Challenge
Choose from:
5 featured hikes 2-4 miles long
5 more adventurous hikes 6-14 miles long
And an opportunity to join a Trail Workday
Signups start in January for 2014

165+ Mile Hikes:
Segment Hikes
June – September
Wednesday and Friday groups
Signups start Jan. 29 at 10 a.m.
Thru Hikes
August 9-24, 2014
September 7-22, 2014
Signups start Jan. 15 at 10 a.m.

Registration for all programs can be found at tahoerimtrail.org

Become a Tahoe In Depth subscriber or supporter

We hope you've enjoyed this edition of Tahoe In Depth. Feedback for our first two issues was so overwhelming that we are looking for sustainable funding. **You can help!** Consider becoming a subscriber to Tahoe In Depth so that you and others can continue to receive ideas on "Protecting, Enjoying & Exploring the Lake Tahoe Basin" in your mailbox.

All subscribers are entered in a drawing to win a gift certificate from a local nursery. Just cut out and mail in the subscriber form and your check made out to the Tahoe Regional Planning Agency. Please add the Tahoe In Depth account number 0000552 on the note line.

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Enter our drawing!

For every issue of Tahoe In Depth, all subscribers are entered to win a $100 gift certificate from a local nursery for a native plant.

This month's winner

Congratulations to **Alicia Stimka** of Carson City, Nevada, our first subscriber winner!

Thank You

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What readers are saying:

Just received the inaugural issue of Tahoe in Depth, and read it cover to cover. Nice work! It's informative, attractive, and easily read. M.K. – Homewood, CA

I absolutely love Tahoe in Depth! What a great idea, I look forward to future publications… S.H. – Incline Village, NV

Hurrah!!!! What a great publication! Everything I wanted to know and more and more. Please keep up the good work and keep it coming. Of course I would subscribe.
W.R. – San Mateo, CA

I found the newspaper (Tahoe In Depth) most interesting, extremely informative and would certainly subscribe. I am president of our local condo association and we are reviewing some of the conservation measures outlined in your paper regarding sustainable gardening and landscaping. I applaud the effort you have put forth in your newspaper…
M.O. – Los Angeles, CA

If you are interested in becoming an underwriter, please contact Kristi Boosman, Partnerships and Communications Officer for the Tahoe Regional Planning Agency, at 775-589-5230 or kboosman@trpa.org.

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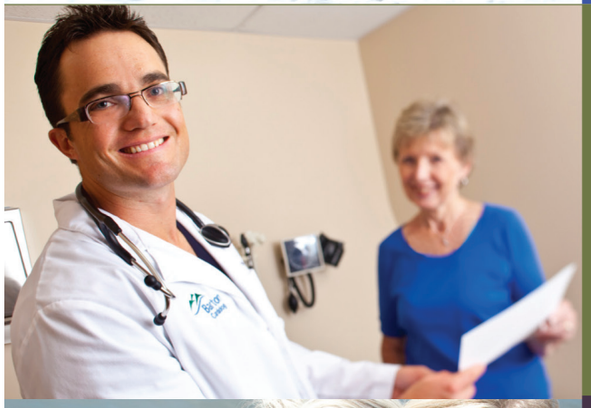

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Tribe has history as Tahoe stewards

Washoe consider the Lake to be the heart of ancestral home

By Kristi Boosman
Tahoe Regional Planning Agency

Long before European settlers arrived in the Tahoe Basin, the Washoe people were hunting, fishing, and gathering in the meadows, along the streams, and in the waters of Lake Tahoe. According to legend, the Washoe did not travel to this area from another place; they were here in the beginning and have always lived here as stewards of the land.

"For thousands of years, the Washoe and the landscape were inseparable," explained Darrel Cruz, director of the Cultural Resource Department for the Washoe Tribe of Nevada and California. "We were part of the Lake Tahoe environment, not visitors in it."

The Washoe people still consider Lake Tahoe a sacred place and the heart of their ancestral home. As such, they continue to work to protect the Tahoe Basin, and their cultural heritage, to ensure that their history remains a continued part of the environment.

Today the Washoe Tribe works with federal, state, and local partners providing input, support, and consultation on restoration efforts and Environmental Improvement Program (EIP) projects throughout the Basin.

One such project is the Lower Blackwood Creek Restoration, an EIP effort led by the California Tahoe Conservancy along the West Shore of Lake Tahoe. This project, along with past projects implemented by the U.S. Forest Service Lake Tahoe Basin Management Unit, enhances aquatic and riparian habitat conditions and provides water quality benefits by reducing sediment sources in a watershed that contributes more fine sediment per acre than any other watershed in the Basin. Blackwood Creek is also an important historical fishery for the Washoe.

The Washoe Tribe provided important archaeological consultation and monitoring assistance for this project. During the planning phase, the Washoe participated in consultations to confirm there were no known, significant early Native American sites or other culturally sensitive properties in the study area. During project construction, they provided onsite cultural monitoring assistance to ensure that excavation and ground-disturbing activities did not impact buried artifacts or previously unknown tribal sites.

Artifacts found along Blackwood Creek (above) were documented and then reburied at the site of a former tribal fishing camp. The Washoe were still fishing for Lahontan cutthroat trout in 1911 (left) and today's tribal leaders would like to see the fish re-established at Lake Tahoe. The tribe provides input on environmental restoration efforts throughout the Tahoe Basin.

Cruz and his colleagues were able to find evidence of a small Washoe fishing camp along Blackwood Creek and unearthed arrowheads, a mixing bowl, and mineral evidence of an encampment. Artifacts were documented and returned to the earth, and project activities were monitored so as to avoid significant impact to these cultural sites and artifacts.

Marie Barry, the Washoe Tribe's environmental director, and her team provided technical input and support for the Forest Service Blackwood Creek Restoration project, which is above the Conservancy project area on National Forest System land. The Forest Service projects, which were implemented in 2008 and 2009, consisted of reconstructing three-quarters of a mile of channel within the most degraded reach of Blackwood Creek. Barry and her staff reviewed designs, conducted site tours, and discussed different restoration techniques for consideration. The Washoe Tribe has worked on numerous bank-stabilization projects and have considerable experience in this area.

"Restoring the functional channel and floodplain connectivity is critical to maintaining a properly functioning creek," said Barry. "It also improves riparian vegetation for bank stability, wildlife, and fisheries habitat and reduces the amount of sediment entering Lake Tahoe."

Lahontan cutthroat trout.

Tribe eager to see Lahontan re-established at Tahoe

The Washoe Tribe would like to eventually see Lahontan cutthroat trout re-established within the Lake Tahoe Basin watershed – a goal shared by multiple agencies.

One of the goals of the Blackwood Creek restoration is to improve fish habitat. Though Lower Blackwood Creek was just completed last year, and monitoring activities are still under way, initial observations indicate that the fish habitat has already improved.

Should the Lahontan be successfully reintroduced in Lake Tahoe, the Washoe's historical fishery at Blackwood Creek could one day see this important native fish come home.

According to the Washoe Cultural Resource Advisory Council, "The Washoe tribe supports our cooperating agencies in their efforts to protect and preserve the natural and cultural environments of the Lake Tahoe Basin and beyond."

To learn more about the Washoe's history, traditions and culture, please visit washoetribe.us.